REMARKS

In the Office Action the Examiner noted that claims 1-17 are pending in the application. The Examiner rejected claims 1, 6-8, 13-15, and 17, objected to claims 2-5 and 9-12, and allowed claim 16. The Examiner's rejections are traversed below, and reconsideration of all rejected and objected to claims is respectfully requested.

Request For Withdrawal Of Final Office Action

In item 3 on page 3 of the Office Action the Examiner addressed the arguments made by the Applicants in the Response filed on November 1, 2004. However, the Examiner only addressed the component of the Applicants' arguments regarding Chu's failure to disclose "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together," as is recited in claim 1 of the present application.

Regarding claim 15 of the present application, the Applicants argued that Chu, along with not disclosing grouping similar ones of the code words together in any of the multiple lookup tables, does not disclose that "common neighboring portions of the code words are written one time in a single section of the respective columns" of the code table. This fact is obvious because Chu does not disclose any sort of organizational columns whatsoever in the multiple lookup tables disclosed. However, the Examiner has not addressed the Applicants' traversal regarding this deficiency of Chu. Similarly, the Examiner has not addressed the Applicants' traversal of the claim 17 rejection, namely that Chu does not disclose "an efficiently configured decoding table to perform soft demodulation of RLL codes."

As noted in at least MPEP 707.07(f), the Examiner is required to answer and address all traversals. This requirement is in addition to any repetition of a previously held position and is required to allow the Applicants a chance to review the Examiner's position as to these arguments and to clarify the record for appeal.

Additionally, and as further noted in MPEP 707.07(f), a failure of the Examiner to address the Applicants' traversals can be deemed a failure to rebut these arguments so as to admit that the arguments have overcome the rejection. At the very least, the failure to address the Applicants' traversals would render the Examiner's decision to again reject the claims arbitrary and capricious and invalid under the Administrative Procedures Act, 5 U.S.C. § 706, the standard under which such rejections are reviewed in view of Dickinson v. Zurko, 527 U.S. 150, 50 USPQ2d 1930 (1999).

As such, since the Examiner has not addressed the Applicants' traversals presented in the Response of November 1, 2004, it is respectfully requested that the Examiner withdraw the Final Office Action and issue a new Office Action addressing these traversals, or, in the alternative, withdraw the rejection of claims 15 and 17.

Claim Rejections Under 35 USC §102

In item 2 on pages 2-3 of the Office Action the Examiner rejected claims 1, 6, 7, 8, 13, 14, 15 and 17 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,253,053, issued to Chu et al. (hereinafter referred to as "Chu"). The Applicants respectfully traverse the rejections by the Examiner.

Claim 1 of the present application recites:

> An apparatus which demodulates a code word having a second predetermined bit length greater than a first predetermined bit length, the code word resulting from modulation of a data word having the first predetermined bit length, the apparatus comprising:
> a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together; and
> a soft demodulator to calculate probabilities of individual bits that constitute the code words, and to generate a soft demodulation value of the data word.

Therefore, "similar ones of the code words are arranged to be grouped together," and the soft demodulator calculates the probabilities of individual bits that constitute the code words. This grouping of the similar code words allows the soft demodulator to avoid repeating calculations for the probabilities of the bits of the code words, by using previous results on portions of the code words that have identical bits.

Chu describes a "scheme for variable-length decoding using lookup tables on a computer system" (Column 1, Lines 8-10). The apparatus disclosed in Chu employs multiple lookup tables in which a first lookup table is used for more frequently appearing variable length codewords (VLC's), wherein an additional lookup table or tables are used to decode the less frequent VLC's (Column 3, Lines 65 through Column 4, Line 37). However, there is no soft demodulation disclosed at all in Chu. A soft demodulator calculates the probabilities of individual bits, the bits constituting a code word, and provides a soft value of the data word (see, for example, paragraph [0030] of the present application). In contrast to claim 1 of the present application, Chu simply reads a VLC and searches for a match for the VLC in one of the multiple lookup tables employed in the system (Column 3, Line 56 through Column 4, Line 37). Therefore, Chu merely discloses reading a VLC and cross-referencing the VLC in the lookup

table in order to determine the data word, rather than soft modulating the code word to predict the likelihood of the individual bits, which allows for correction of errors caused in transmission of the code word.

Regarding the disclosure of Chu, the Examiner states:

> As shown in FIG. 10, 1000 may contain two lookup tables 1003 known as the "frequent" lookup table, and 1004 that is known as the "infrequent" lookup table. Each of these tables contain 2.sup.8 entries (256) to allow full decoding of the incoming bit stream. Frequent table 1003, is used for the most frequent occurrences of the first 8 bits in the incoming bit stream 1002. Because a great majority of the VLC'S will be 8 bits in length or less, a quick lookup into frequent table 1003 may obtain the decoded values; *hence a soft demodulation is performed.* (Emphasis added.)

With the exception of "hence a soft demodulation is performed," these statements are taken directly from Column 20, Lines 7-15 of the disclosure of Chu. However, as noted above, Chu makes no mention whatsoever of any soft demodulation, and there is no evidence as to why the Examiner would characterize it as such. Chu merely looks through the lookup tables for the received VLC, and does not calculate the probability of the values of the bits comprising the code words.

Further, Chu does not disclose "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together." Chu merely divides a lookup table into two or more tables so that more frequently used VLC's are located in the first table, whereas the subsequent tables must be searched for the less frequent VLC's. "The VLC is used as an index into a first table, wherein the first table contains decoded values for all possible VLD's with first Y bits not equal to any values in [the] first set of values" (Column 3, Lines 65-69). Therefore, Chu discloses placing the most frequently used VLC's in the first lookup table. However, Chu does not disclose the grouping together of similar ones of these code words inside the table, as is recited in claim 1 of the present application. The Examiner states that "[t]he grouping of the frequent vs. infrequent codewords complies with the requirement that 'similar' codewords (sic) be grouped together." But the Applicants respectfully submit that separating code words into frequent and infrequent groups, and creating separate tables for each, is not tantamount to "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together." In other words, in claim 1 of the present application, the code words found in the single recited code table comprises code words that are arranged inside the single recited code table such that similar ones of the included code words are grouped together. This is in direct contrast to Chu, which does not disclose any such arrangement of the code words once they are designated to one or

the other lookup tables. The code words of the lookup tables in Chu are presumably placed in numerical order, which is implied by the disclosure and figures of Chu, and not arranged inside the single code table in any sort of grouping at all.

Therefore, Chu does not disclose the feature of "a code table comprising a plurality of the code words, wherein similar ones of the code words are arranged to be grouped together," nor does Chu disclose the feature of "a soft demodulator to calculate probabilities of individual bits that constitute the code words, and to generate a soft demodulation value of the data word." Accordingly, Chu does not disclose every element of the Applicants' claim 1. In order for a reference to anticipate a claim, the reference must teach each and every element of the claim (MPEP §2131). Therefore, since Chu does not disclose the features recited in independent claim 1, as stated above, it is respectfully submitted that claim 1 patentably distinguishes over Chu, and withdrawal of the §102(b) rejection is earnestly and respectfully solicited.

Claims 6 and 7 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by Chu. Therefore, it is respectfully submitted that claims 6 and 7 also patentably distinguish over Chu.

Claim 8 of the present application recites "using a code table comprising a plurality of code words, wherein similar ones of the code words are arranged to be grouped together; and calculating probabilities of individual bits that constitute the code words, and generating a soft demodulation value of the data word." As stated above in this Response, Chu does not disclose a code table wherein similar ones of the code words are arranged to be grouped together, nor does Chu disclose calculating probabilities of individual bits of the code words to generate a soft demodulation value of the data word. Therefore, the Applicants respectfully submit that claim 8 also patentably distinguishes over Chu.

Claims 13 and 14 depend from claim 8 and include all of the features of that claim plus additional features which are not taught or suggested by Chu. Therefore, it is respectfully submitted that claims 13 and 14 also patentably distinguish over Chu.

Claim 15 of the present application recites a code table to be used by a soft demodulator "wherein the code table is divided into a predetermined number of columns containing portions of the code words, and common neighboring portions of the code words are written one time in a single section of the respective columns." As discussed above, Chu does not disclose grouping similar ones of the code words together in any of the multiple lookup tables provided in Chu. Further, Chu does not disclose "common neighboring portions of the code words are written one time in a single section of the respective columns." In fact, Chu does not discuss the

organization of common neighboring portions of code words at all. Therefore, it is respectfully submitted that claim 15 also patentably distinguishes over Chu.

Claim 17 of the present application recites "an efficiently configured decoding table to perform soft demodulation on RLL codes; wherein calculations on common portions of a plurality of the code words are not repeated." As stated earlier in this Response, Chu does not disclose any soft demodulation of the code words whatsoever, and therefore does not disclose an efficiently configured decoding table such that soft demodulation calculations are not repeated. Therefore, it is respectfully submitted that claim 17 also patentably distinguishes over Chu.

Also, as submitted earlier in this Response, the Examiner has not addressed the previous traversals made by the Applicants regarding claim 15, concerning Chu's failure to disclose that "common neighboring portions of the code words are written one time in a single section of the respective columns," and claim 17, concerning Chu's failure to disclose "an efficiently configured decoding table to perform soft demodulation on RLL codes." Therefore, the Applicants again respectfully request the withdrawal of the finality of the current Office Action, or the allowance of claims 15 and 17.

Allowable Subject Matter

In item 5 on page 4 of the Office Action the Examiner indicated that claim 16 is allowed.

Claim Objections

In item 6 on page 4 of the Office Action the Examiner objected to claims 2-5 and 9-12 as being dependent upon rejected base claims, but indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As previously discussed, the independent claims upon which these claims depend all patentably distinguish over Chu. Therefore, it is respectfully submitted that dependent claims 2-5 and 9-12 also patentably distinguish over the cited reference, and withdrawal of the objection to these claims is respectfully requested.

Summary

There being no further outstanding objections or rejections, it is respectfully submitted

that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN, MCEWEN & BUI, LLP

Date: 04/04/05

By: Thomas L Jones
Thomas L. Jones
Registration No. 53,908

1400 Eye St., NW
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510